

# **Sheep Creek**

## **Vegetation Management Project**

### **Invasive Plants Report**

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South Zone Wallowa-Whitman National Forest

11/23/2020

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## Introduction

This report addresses the potential effects of the Sheep Creek Vegetation Management Project (Sheep) on the spread and establishment of noxious weeds listed by Union County and the State of Oregon. Noxious weeds are defined as non-native species whose introduction causes or is likely to cause economic, environmental, or human health harm.

The only comment from our scoping efforts directly related to noxious weeds was a request for a requirement that all decommissioned roads that entail ground disturbance have native seeding performed.

## Relevant Laws, Regulations, and Policy

### Regulatory Framework

#### Land and Resource Management Plan

The Pacific Northwest Region Invasive Plant Program Record of Decision (Region 6 ROD) (USDA 2005) amended the Forest Plan (amendment #RF-5) for the Wallowa-Whitman National Forest in 2005. The Region 6 ROD outlined 23 standards for the prevention and management of invasive plants that have been added to all regional forest plans and require consideration of invasive species in all planning efforts. The regional ROD does not however, approve any site-specific treatment, instead requires a completed analysis by each National Forest (see the specific sections below for the specific analysis).

Of the 23 prevention and management standards in the regional ROD, only seven directly affect activities found in Sheep. These standards are:

- ◆ Prevention of invasive plant introduction, establishment and spread will be addressed in watershed analysis; roads analysis.... vegetation management plans, and other land management assessments.
- ◆ Actions conducted or authorized by written permit by the Forest Service that will operate outside the limits of the road prism, require the cleaning of all equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) prior to entering National Forest System Lands.
- ◆ Use weed-free straw and mulch for all projects, conducted or authorized by the Forest Service, on National Forest System Lands.
- ◆ Use only gravel, fill, sand, and rock that are judged to be weed free by District or Forest weed specialists.
- ◆ Conduct road blading, brushing and ditch cleaning in areas with high concentrations of invasive plants in consultation with District or Forest-level invasive plant specialists.
- ◆ Develop a long-term site strategy for restoring/re-vegetating invasive plant sites prior to treatment (if invasive plant treatment is needed prior to project activities as a prevention measure).
- ◆ Native plant materials are the first choice in re-vegetation for restoration and rehabilitation where timely natural regeneration of native plant community is not likely to occur.

In 2010 the Wallowa-Whitman National Forest Invasive Species Plan ROD was signed. This decision authorized the treatment of invasive species on specific sites on the forest. This decision created the ability to conduct Early Detection Rapid Response (EDRR) on newly discovered sites. The desired condition stated in the Wallowa-Whitman National Forest Invasive Treatment FEIS is to maintain or

improve the diversity, function, and sustainability of desired native plant communities and other natural resources that can be adversely impacted by invasive plant species.

### **Federal Law**

The Federal Noxious Weed Act of 1974, as amended (7 U.S.C 2801 et seq.) requires cooperation with State, local, and other Federal agencies in the application and enforcement of all laws and regulations relating to management and control of noxious weeds.

Forest Service Manual 2900 (2011)

(2903-4) Determine the risk of introducing, establishing, or spreading invasive species associated with proposed action, as an integral component of project planning and analysis, and where necessary provide for alternates or mitigation measures to reduce or eliminate that risk prior to project approval.

(2903-5) Ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the National Forest System, or to adjacent areas.

### **Executive Orders**

Executive Order 13112 (1999) Federal Agencies shall not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless pursuant to the guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

### **State and Local Law**

ORS Chapter 569 (2017) states that the federal government should cooperate with individual owners in the control and eradication of noxious weed pests. In Union County it is required that landowners manage weeds named on their noxious weed list.

### **Other Guidance or Recommendations**

Under the National Strategy and Implementation Plan for Invasive Species Management (2004), the Chief of the USFS identified invasive species as one of the four significant threats to our Nation's forests and rangeland ecosystems. The goal of this plan was to reduce, minimize, or eliminate the potential for introduction, establishment, spread, and impact of invasive species across all landscapes and ownership. Four strategic elements were described: prevention, EDRR, control and management, and rehabilitation/restoration.

## **Recommended Mitigation Measures and Monitoring Prescriptions**

The following are recommended mitigation measures and monitoring prescriptions.

- ◆ Project personnel would inform invasive species personnel pre-seasonally annually of upcoming project activities (i.e. ground disturbing activities), so reprioritization of treatment (if deemed necessary) and inventory can begin prior to the start of project activities.
- ◆ New infestations would be inventoried and managed under early detection rapid response (EDRR) guidelines.

- ◆ To reduce the potential spread from known invasive plant sites, these occurrences would be identified as Areas-To-Avoid for moderate to high-risk ground disturbance activities. Coordination will occur with invasive species specialists for exceptions.
- ◆ All landings, skid trails, and decommissioned roads with soil disturbance evident would be rehabilitated and seeded with an approved native seed mix after completion of project activities.

## Topics and Issues Addressed in This Analysis

### Resource Indicators and Measures

Several factors such as type of disturbance, proximity to propagule source, and size or magnitude of disturbance can increase the propensity for invasion of an otherwise healthy native plant community by noxious weeds (Mack & D'Antonio 1998, Lockwood et al. 2005). In this analysis, two factors will be considered.

1. Will the project activities increase the potential for the spread of noxious weeds?
2. Will the project activities increase the potential for the introduction of noxious weeds?

The spread of noxious weeds occurs by the dispersion of seeds, and in some cases plant parts, to receptive locations. Ground disturbance along with the reduction in competition from native species after disturbance is one factor in their spread. The pre-existence of noxious weed plants in the vicinity of project activities would increase the potential for their spread. A third factor are the agents of weed seed transport. These three factors will be the indicators used to measure the effects of the Sheep Project on the potential spread of noxious weeds.

The potential establishment of noxious weeds would occur through the introduction of noxious weed seeds of populations not present within the analysis area. Project activities can introduce new species into areas by transporting noxious weed material on machinery or personnel. The indicator used to measure and compare the potential to establish noxious weeds is the change in the number of agents of seed transport that come from out of the area of analysis. Table 1 displays the four resource indicators and the measures that will be used in this report to analyze the differences between alternatives.

**Table 1. Resource indicators and measures for assessing effects**

| Resource Element    | Resource Indicator  | Measure  |
|---------------------|---|--|
| Potential to spread | 1. Are invasive species on the state and county weed list present in the analysis area?     | The presence of listed noxious weeds within the sub watershed where activities are occurring at levels above what could be pretreated or contained.          |
| Potential to spread | 2. What is the change in potential vectors for spread of invasive plants?                   | The change in traffic of motorized vehicles (machinery, ATV, auto/trucks), humans on foot, animals, wind, or other potential sources of weed seed transport. |
| Potential to spread | 3. What is the change in potential receptive seed bed for establishment due to disturbance? | The change in acres of temp roads, slash piles, and off-road equipment operation.  |

|                        |   |  |
|------------------------|---|--|
| Potential to establish | 4. What is the potential of noxious weed seeds being transported to the project area from outside of the sub watershed? | The change in the number of potential agents transporting noxious weed seeds to the project area from outside the sub watershed. |
|------------------------|---|--|

## Methodology

The potential for each of the proposed activities to increase the spread and establishment of noxious weed species is described using the following qualitative scale:

- ◆ NO – Project activities have no potential to introduce or spread invasive species.
- ◆ LOW – Activities identified as low would create little to no bare soils and have extremely limited potential for the introduction of invasive plant material to the project area. If left untreated, invasive species within these areas would not spread from current locations or expand from current levels at rates higher than those found in the absence of project activities.
- ◆ MODERATE – Moderate level activities are those that, with recommended mitigation could be treated and reduced to pre-project levels, but without the implementation of these measures could begin to spread beyond current levels.
- ◆ HIGH - A high level activity is one that is very likely to create opportunities for the spread and introduction of invasive species which could not be mitigated with prevention measures. To control a population of invasive species established under high intensity activities would likely require an increase in invasive treatment activities (including herbicide use) and funding in order to control the infestation.

In order to analyze the effects of project activities on the potential spread and establishment of noxious weed species, a qualitative estimate for the potential of the impact has been established for each action. They are based on the amount of ground disturbance proposed, the likelihood of spread of an existing site or new sites being established and the proximity of current invasive species sites. Disturbance is defined as a punctuated event or series of events that kill or damage existing organisms, directly or in-directly increase resource availability, and create an opportunity for new individuals to become established (Sousa 1984). An activity with little ground disturbance and no known invasive plants in the vicinity would be rated as having a low potential for invasive species establishment while an area that proposes large scale ground disturbance with invasive plants nearby might be rated as a high. Likewise, if an activity would create little to no ground disturbance and there are no known invasive species infestations nearby it would be rated as a “No” potential for spread while activities that propose large scale ground disturbance with invasive plants on site might be rated as having a high potential for spread.

## Information Sources

Information used to support this analysis come from published reports and scientific studies, data records in the NRM database, and from my professional judgement an invasive plant specialist.

## Incomplete and Unavailable Information

The historic record of invasive plant inventory and the survey work accomplished in preparation for this report is adequate for this analysis.

## Spatial and Temporal Context for Effects Analysis

The spatial boundaries for analyzing the cumulative effects to invasive plants are the Chicken Creek (11,382 acres) and Sheep Creek sub watersheds (24,582 acres) because the dynamic of noxious weed seed dispersion is related to this geological boundary more so than the project activity boundary. The entire analysis area is 35,964 total acres.

The following timeframes were used to discuss the direct, indirect and cumulative effects of project implementation on invasive species related to the potential for establishment and spread of noxious weeds:

- ◆ Short-term timeframe: 1-3 years. This period would be long enough to notice the germination and growth of any new invasive species, or the increase in size of known infestations after project activities.
  - ◆ Long-term timeframe: 25-30 years. This long-term timeframe was chosen because unforeseeable future projects, demographic changes, etc., make assumptions beyond this timeframe speculative.
- Direct/Indirect Effects Boundaries.

## Affected Environment

### Existing Condition

There are 31 inventoried invasive plant sites (6 different species) within the two sub watersheds being analyzed for this project. The total noxious weed plant inventory is 198 acres. The inventoried acres within the project area are shown in the table below (Table 2). Acreages reflect current information in the Forest NRM GIS layer (GIS query November 4, 2020). In addition to these listed species the project area also includes *Ventenata dubia*, *Bromus tectorum*, and others that are potentially harmful invasive species but have not been actively surveyed and recorded at this time. In 2018, an ODA invasive plant specialist performed an area wide survey of all tansy ragwort sites. This agreement was funded by the Challenge Cost Share Program. No tansy plants were detected at these inventory sites; however, the sites are retained in order to periodically monitor the sites.

**Table 2. Noxious Weed Inventory in Sheep with Union County and Oregon State Designations**

| Scientific Name                                   | Common Name                        | Gross Acres | Union County Designation | Oregon State Designation |
|---|------------------------------------|-------------|--------------------------|--------------------------|
| <i>Centaurea diffusa</i>                          | diffuse knapweed                   | 134         | B                        | B                        |
| <i>Centaurea stoebe</i><br>ssp. <i>micranthos</i> | spotted knapweed                   | 7           | B                        | B (T)                    |
| <i>Cirsium arvense</i>                            | Canada thistle                     | 48          | B                        | B                        |
| <i>Cynoglossum officinale</i>                     | Gypsyflower<br>(houndstongue)      | 7           | B                        | B                        |
| <i>Linaria vulgaris</i>                           | Common toadflax                    | 1           | A                        | B                        |
| <i>Senecio jacobaea</i>                           | stinking willie (tansy<br>ragwort) | 1           | A                        | B(T)                     |
| <b>Total</b>                                      |                                    | <b>198</b>  |                          |                          |

Union County and the Oregon Department of Agriculture (ODA) designate listed invasive species status using a similar system.

“A” designated species – an invasive of known economic importance which occurs in the state/county in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states/counties makes future occurrence seem imminent.

Recommended Action: Infestations are subject to intensive control when and where found in Union County with possible assistance from the Oregon Department of Agriculture.

“B” designated species – an invasive of economic importance which is regionally abundant, but which may have limited distribution in some counties.

Recommended Action: Moderate to intensive control at the county level.

ODA also has “T” designated species, which are a priority noxious weed designated by the Oregon State Weed Board for which the ODA will develop and implement a statewide management plan. “T” designated noxious weeds are species selected from either the state “A” or “B” lists.

## Environmental Consequences

### Alternative 1 – No Action

No project activities (including commercial thinning and prescribed burning) would be authorized under this alternative. All inventoried invasive sites would continue to be managed in accordance with the Wallowa-Whitman Invasive Plant Program ROD (USDA 2010) and the Wallowa-Whitman Forest Plan as amended by Regional Forester Amendment #5 that incorporates the Region 6 ROD.

#### *Resource Indicator and Measure 1- Potential to establish*

There would be no direct effects to the establishment potential of invasive species because no activities would be authorized. Many vectors for the establishment of new populations would still exist from on-going recreation and vehicle travel, livestock and big game transport activities within the project area. Over time, with no additional disturbances to known sites, further treatment success, and no reduction to existing desirable vegetation cover and vigor the known sites could be eradicated or significantly reduced. However, without fuel reduction activities within the project area, indirect effects may exist from wildfire. Wildfire suppression activities could increase the risk of establishment of new invasive species through transport of invasive species seeds and material from personnel and equipment. The potential for this impact would be rated as **High** due to the risks of a stand replacing wildfire.

Wildfire and the activity involved in suppression would also increase the risk of spread of noxious weeds but predicting wildfire occurrence is problematic. Large scale and intense wildfire disturbance would create ideal areas for the spread of noxious weeds. With increasing numbers of wildfires, the numbers of noxious weed species could increase (Merriam, et al., 2006), with the largest increases found in those areas with pre-existing noxious weed populations (Zouhar, et al. 2008).

### *Resource Indicator and Measure 2 – Potential to spread*

There would be no direct effects to the spread potential of invasive species because no activity would be authorized; however, as described above, vectors which can spread seeds from known populations would still occur (recreation, vehicle travel, livestock, big game, etc.) within the project area. In the long-term, with no additional disturbances to known sites, further treatment success, and no reduction to existing desirable vegetation cover and vigor the known sites could be eradicated or significantly reduced. Without fuel reduction the indirect effect due to the risk of large-scale wildfire would continue to be an issue in the project area. Ground disturbance from wildfire and the associated suppression activities create ideal situations for the spread of current invasive species sites. The movement of personnel and equipment through existing invasive species sites could allow for an increased rate of spread. Therefore, the potential spread in the event of a wildfire would be **Moderate**.

Table 3. Resource indicators and measures for alternative 1

| Resource Element       | Resource Indicator  | Measure  | Effect   |
|------------------------|---|--|----------|
| Potential to spread    | 1. Are invasive species on the state and county weed list present in the analysis area?                                 | 198 acres  | Moderate |
| Potential to spread    | 2. What is the change in potential vectors for spread of invasive plants?   | Movement of vehicles, dozers, and personnel crossing land within the sub watersheds while engaged in wildland fire suppression activities.   | Low      |
| Potential to spread    | 3. What is the change in potential receptive seed bed for establishment due to disturbance?                             | 35,964 acres of wildfire burned areas including dozer and handline constructed in wildland fire suppression activities.  | Moderate |
| Potential to establish | 4. What is the potential of noxious weed seeds being transported to the project area from outside of the sub watershed? | The number of vehicles and personnel required in wildfire suppression activities.<br>*Weed inspection not required for vehicles engaged in initial attack on wildfire suppression. | Moderate |

### **Alternative 2 – Proposed Action**

The proposed action consists of vegetation treatments including commercial harvest, non-commercial thinning, and associated fuels treatments such as grapple pile, hand pile, and prescribed fire. The proposed action also includes temporary road construction, road reconstruction, and road maintenance. Activities in alternative 2 that would have a negligible effect and are not discussed further.

To address the purpose and need, 11,438 acres of timber harvest and non-commercial thinning were proposed which would include follow-up treatments such as post-harvest understory removal, piling and burning. An additional 9,521 acres of prescribed burning across 12 natural fuels burn blocks were proposed. Proposed treatments would require approximately 4 miles of temporary road construction and an additional 38 miles of ground disturbance related to road maintenance and reconstruction to facilitate harvest activities.

Road management activities associated with the proposal include 13.4 miles of reconstruction, 4 miles of temporary road use, 24.5 miles of closed roads utilized, 0.16 mile of road decommissioned, and 4 culverts replaced.

## Project Design Features and Mitigation Measures

Required mitigation measures that would decrease the effects of project activities include seeding disturbed ground the fall or spring after activities are completed, cleaning equipment before entering the project area, and avoiding work in weed sites, especially when plants are fruiting. EDRR of discovered infestations would be implemented in concert with the required post completion monitoring.

## Required Monitoring

Required mitigation and monitoring includes the seven prevention and management standards and EDRR monitoring items listed above that will diminish the potential effects of the activities.

## Direct and Indirect Effects - Alternative 2

While effects of fuels reduction/vegetation management projects on invasive species are difficult to predict and quantify and may change depending on duration and extent of activity and disturbance, certain associated activities may affect different species in a different manner. For example, the effects of prescribed fire and pre-commercial thinning can vary depending on the specific technique and the timing of the activity. Prescribed burning can affect the invasive plants differently depending on the time of occurrence. Fall burning has been shown to increase (although not significantly) the number of native species when compared to spring burning, while spring burning tends towards a decrease in the number of weeds (Potts & Stephens, 2009). Effects of thinning treatments also depend on the timing as well as the type of activity. Heavy equipment use has the largest possibility of disturbing soil and introducing plant material to an area, while low impact mechanical thinning by way of mastication has the lowest chance. Timing of mastication, however, can affect the invasive plants differently. Spring thinning by mastication could result in decreased invasive introductions when compared to similar activities in the fall. Interestingly, thinning by hand crews has a slightly increased chance of negative effects. This generally occurs through a larger reduction of cover than compared to mastication treatments (Merriam, et al., 2006; Potts & Stephens, 2009). Timing of activities within this project should consider these variable effects.

Road use (including use and construction of temporary roads) can create situations that favor the spread of invasive plants by disturbing roadsides and carrying seeds to un-infested areas. Use and construction of temporary roads can allow the easy spread of invasive plants to previously un-infested areas. The risk associated with road use and invasive species will increase as miles of temporary road use and construction increases. Exact estimates of this risk however, are unknown and difficult to predict. Implementation of the Project Design Criteria for invasive species proposed in this alternative would ensure that spread of invasive species would be expediently managed through integrated treatments.

## *Resource Indicator and Measure 1- Potential to Spread*

The potential for noxious weeds to spread as a result of project activities would occur by the movement of weed seeds/materials on project personnel and equipment. As the number of total treatment acres increases, the amount of personnel and equipment increases, thus the risk of weed spread also increases. Alternative 2 proposes 4,230 more acres of non-commercial thinning and commercial treatment than alternative 3. All of these activities have a potential to increase the risk of spread to non-infested sites. The riparian treatment proposed also have the potential to increase spread of weeds, but due to the equipment exclusion this would generally occur only in those areas that have little to no understory cover. These areas are at risk for spread, not due to ground disturbance, but due to lack of competition from existing native vegetation.

However, with project activities that are designed to reduce fuel loading within the project area, indirect effects in terms of a reduction in the risk of spread may exist. This benefit is due in part to the decreased

fuel loading and decreased risk of large-scale wildfire that will result from this vegetation management project. With a decrease in wildfire potential, there would be a reduced need of suppression activity which could indirectly lower the opportunity for the transportation weed material and thus the enlargement of existing sites or the spread to non-infested sites within the project area.

The overall effect intensity of this alternative on the potential to establish invasive species is estimated to be **Moderate**, due to the area of proposed activity but the large number of acres proposed for fuels reduction and the subsequent decrease in wildfire risk.

### *Resource Indicator and Measure 2 – Potential to Establish*

Direct effects to the establishment potential of invasive species due to project activities would occur due to movement of invasive species materials on project personnel and equipment from outside of the analysis area. This, combined with ground disturbance as a result of project activities, would potentially be a risk for the establishment of various weed species within the project area. Personnel and equipment associated with prescribed fire, non-commercial thinning, commercial treatment, temporary road construction, and road reconstruction activities are the potential agents of transport for weed seeds/material from outside of the project area.

However, with the goal of fuel load reduction, indirect effects in terms of a reduction in the risk of spread may exist. This benefit is due, in part, to the decreased fuel loading and reduced risk of large-scale wildfire that will result from this vegetation management project. The mitigation measure requirement for inspection of vehicles for weed seed and material is not applied to initial attack wildfire suppression activities. With a lowered risk of wildfire potential, there would be a decrease in the potential number of vehicle entry and ground disturbance associated with wildfire suppression. Thus, the establishment of weed species beyond their current extent would also be reduced.

The overall effect intensity of this alternative on the potential to establish noxious weeds is estimated to be **Moderate**, due to the requirement to clean equipment associated with the project prior to entry along with the potential decrease in risk of large-scale wildfire.

**Table 4. Resource indicators and measures for alternative 2 direct/indirect effects**

| Resource Element       | Resource Indicator  | Measure  | Alternative 2 Direct/Indirect Effects |
|------------------------|---|--|---------------------------------------|
| Potential to spread    | 1. Are invasive species on the state and county weed list present in the analysis area?                                 | 198 acres  | Moderate                              |
| Potential to spread    | 2. What is the change in potential vectors for spread of invasive plants?   | 11,598 acres of timber treatments  | Moderate                              |
| Potential to spread    | 3. What is the change in potential receptive seed bed for establishment due to disturbance?                             | 25,947 acres burn treatments<br>23.06 miles road reconstruction<br>105.97 miles road disturbance<br>11 culverts replaced | Moderate                              |
| Potential to establish | 4. What is the potential of noxious weed seeds being transported to the project area from outside of the sub watershed? | Number of vehicles and personnel entering the project area associated with the project activities.                       | Moderate                              |

## Cumulative Effects – Alternative 2

### *Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis*

Generally, the risk of large-scale wildfire combined with unregulated travel, road use, private land activities, and grazing has the greatest chance for cumulative effects on weeds within the analysis area. However, predicting wildfire occurrence is problematic. Large-scale and intense wildfire disturbance would create ideal areas for the introduction and spread of weeds. With increasing numbers of wildfires, the numbers of invasive species could increase (Merriam, et al., 2006), with the largest increases found in those areas with pre-existing noxious weed populations. One benefit of this project is the decrease of current fuel loading and therefore the risks of uncontrolled wildfire, so future large-scale burns should be reduced. This reduction may further decrease the risk for areas outside of the treatment area boundaries (Merriam, et al., 2006).

Of the activities with predictable timetables, the effects of activities of this alternative (increased risk of ground disturbance, transportation of weed seed/materials, and reduction in competition) coupled with road maintenance, private land activities, recent and concurrent stream restoration projects, the recent Blue Fly Fuels Reduction Project, and grazing have the highest possibility of detrimental cumulative effects within the analysis area. Roads are a vector of weed spread and transport, thus unregulated road use increases this risk. Travel management decisions (expected in the future on this forest) should reduce this risk by ending unregulated road use and cross-country vehicle traffic. Grazing could also increase the risk of spread and introduction of weeds. Livestock are vectors of plant material and can transport seeds and other plant reproductive material over many miles. Another unknown factor is the large amount of disconnected private land holdings inside the analysis area. The invasive plant management practices on these lands is outside the knowledge and authority of the USFS. The La Grande Ranger District invasive plant control program would have a beneficial effect on preventing the spread and establishment of noxious weeds.

### *Resource Indicator and Measure 1- Potential to Spread*

Ground disturbance that would occur in concert with that resulting from project activities would be caused by grazing, OHV travel, , road maintenance, and unknown activities on private land. The combined effects of these areas of ground disturbance would have a **Moderate** cumulative effect over the effected analysis area. Active invasive plant monitoring and treatment would mitigate these effects on USFS land. Private land weed management within the area being considered is unknown.

### *Resource Indicator and Measure 2 – Potential to Establish*

The movement of personnel, machinery, and animals and animal movement are means of the potential for the establishment of weeds due to project activities. Grazing, OHV travel, road travel and maintenance, and travel through private land are factors contributing to these phenomena. In addition, invasive plant spread into RHCAs compounds their spread by facilitating the dispersion of seed downstream through water movement.

**Table 5. Resource indicators and measures for alternatives 2 and 3 cumulative effects**

| Resource Element    | Resource Indicator  | Measure /Project                                   | Alternatives 2 and 3 Cumulative Effects   |
|---------------------|---|--|---|
| Potential to spread | 1. Are invasive species on the state and county weed list present in the analysis area? | Wallowa-Whitman Invasive Plant Program activities. | Reduces the extent and amount of weed sites throughout the project area through on-going treatments of existing invasive populations. |

|                        |   |   |   |
|------------------------|---|---|---|
| Potential to spread    | 2. What is the change in potential vectors for spread of invasive plants?   | Grazing<br>Stream Restoration - 21 miles<br>OHV travel – x miles trails<br>Unregulated off-road use   | Unregulated use of off highway vehicles and grazing pose a risk to spread of weeds due to the movement of plant material and the ability to introduce these materials to random areas that are difficult to identify for treatment. Restoration and fuel reduction projects increases the potential for spread of weed material.                        |
| Potential to spread    | 3. What is the change in potential receptive seed bed for establishment due to disturbance?                             | Blue Fly Project - 4,034 acres<br>Stream Restoration - 21 miles<br>OHV travel – x miles trails<br>Unregulated off road use<br>Grazing   | Ground disturbance from road maintenance, restoration, and fuel reduction projects adds to that resulting from Sheep activities.  |
| Potential to establish | 4. What is the potential of noxious weed seeds being transported to the project area from outside of the sub watershed? | 1.Cattle entering the analysis area from outside the area.<br>2.Machinery and personnel coming into the area associated with:<br>-Stream Restoration<br>-Blue Fly<br>3. Entry of people and vehicles associated with recreational activities.<br>4. Entry of people and vehicles associated with private land owners. | 1.Cattle could carry weed seed/material to project area.<br>2. Regional standards regarding equipment inspection for noxious weeds would help to reduce the risk of this potential effect. 3. Recreators would intersect project areas with ground disturbance.<br>4.Private land owners have unknown activities and would cross onto to project areas. |

### Alternative 3 – Reduced Treatment Acres

This alternative has the same activities as alternative 2 that would potentially affect noxious weeds. The difference is a decreased in the amount of acres treated and miles of road related disturbance.

#### Project Design Features and Mitigation Measures

The same mitigations would be practiced as in alternative 2.

#### Required Monitoring

The same monitoring would be required as in alternative 2.

#### Direct and Indirect Effects - Alternative 3

Similar direct and indirect effects would be expected for alternative 3. The decrease in acres treated decrease ground disturbance and vehicle entry, but would increase the potential for catastrophic wildfire effects on the untreated land.

#### *Resource Indicator and Measure 1- Potential to Spread*

The effects on the potential to spread for this alternative are estimated to be less than those in alternative 2 due to the decrease in the correlated acres of ground disturbance. However, the areas not treated would be more vulnerable to intense wildfire.

### *Resource Indicator and Measure 2 – Potential to Establish*

The potential to establish is estimated to be less due to the decrease in equipment and personnel entry into untreated areas. However, the untreated area, having an increased potential for intense wildfire, is potentially more vulnerable to entry of equipment associated with wildfire suppression.

### **Cumulative Effects – Alternative 3**

#### *Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis*

### *Resource Indicator and Measure 1- Potential to Spread*

The cumulative effects of project activities under alternative 3 will occur in a similar fashion to alternative 2. The cumulative effects on the potential to establish for this alternative are estimated to be less than those in alternative 2 due to the decrease in the correlated acres of ground disturbance.

### *Resource Indicator and Measure 2 – Potential to Establish*

The potential to spread is estimated to be less due to the decrease in acres entered by equipment and personnel.

**Table 6. Resource indicators and measures for alternative 3 direct/indirect effects**

| <b>Resource Element</b> | <b>Resource Indicator<br/>(Quantify if possible)</b>  | <b>Measure<br/>(Quantify if possible)</b>   | <b>Alternative 2<br/>Direct/Indirect Effects</b> |
|-------------------------|---|---|--|
| Potential to spread     | 1. Are invasive species on the state and county weed list present in the analysis area?                                 | 198 acres   | Moderate   |
| Potential to spread     | 2. What is the change in potential vectors for spread of invasive plants?   | 7,368 acres timber treatments   | Moderate/Low                                     |
| Potential to spread     | 3. What is the change in potential receptive seed bed for establishment due to disturbance?                             | 21,605 acres burn treatments<br>7.78 miles road reconstruction<br>78.53 miles road disturbance<br>1 culvert replacement | Moderate/Low                                     |
| Potential to establish  | 4. What is the potential of noxious weed seeds being transported to the project area from outside of the sub watershed? | Number of vehicles and personnel entering the project area associated with the project activities.                      | Moderate/Low                                     |

## Summary

The differences between the indicator measurements are summed up in Table 7. The relevant differences between the action alternatives relate to the number of treatment acres proposed.

**Table 7. Summary comparison of proposed activities and resultant environmental effects to noxious weeds**

| Resource Element       | Indicator/Measure   | Alt 1   | Alt 2  | Alt 3  |
|------------------------|---|---|--|--|
| Potential to spread    | 1. Are invasive species on the state and county weed list present in the analysis area?                                 | 198 acres   | 198 acres  | 198 acres  |
| Potential to spread    | 2. What is the change in potential vectors for spread of invasive plants?   | Unknown quantity associated with wildfire suppression activities. | 11,598 acres   | 7,368 acres  |
| Potential to spread    | 3. What is the change in potential receptive seed bed for establishment due to disturbance?                             | Unknown quantity associated with wildfire suppression activities. | 26,076 acres   | 21,691 acres   |
| Potential to establish | 4. What is the potential of noxious weed seeds being transported to the project area from outside of the sub watershed? | Unknown quantity associated with wildfire suppression activities. | Number of vehicles and personnel entering the project area associated with the project activities. | Number of vehicles and personnel entering the project area associated with the project activities. |

## Summary of Environmental Effects

Table 8 summarizes the bottom-line conclusions of this analysis for each alternative. As stated earlier, alternative 1 will have no direct effects from project activities within the project boundary. The risk of a stand replacing large-scale wildfire is increased due to increased fuel loading, and the potential for invasive species spread and establishment would increase beyond the rate found naturally. This effect, plus continuing risks from other types of activities occurring in the analysis area, would favor the expansion of invasive species within the project area to levels beyond that found without large-scale wildfire activity.

**Table 8. Estimated comparison of environmental effects to noxious weeds**

| Estimated Effect*      | Alt. 1 No-Action | Alt. 2 Proposed Action | Alt. 3 Fewer Acres Treated |
|------------------------|------------------|------------------------|----------------------------|
| Potential to Establish | 4                | 3                      | 2                          |
| Potential to Spread    | 4                | 3                      | 2                          |

\* Estimated effect is based on increases (from pre-project levels) in establishment and spread of invasive species due to project level activities or their lack under alternative 1. Higher number equates to higher risk but is only used for comparison between alternatives and is not an estimate of the intensity of the effect.

Although risks are present with or without project activities, the danger of invasive species establishment due to project activities under alternatives 2 and 3 is increased (although slightly lower under alternative 3). However, the potential to spread invasive species under either of the action alternatives is likely less than under the no action. This is due in large part to the reduction in wildfire risk associated with the action alternatives (slightly more risk under alternative 3 due to a smaller reduction in overall fuel loading). With implementation of project design features to reduce and control the introduction and spread of invasive species we can minimize the impacts that do exist. Specific mitigations and required

standards would continue to reduce the chances of new introductions, spread, and establishment of invasive plants and we could predict a spread and establishment rate at the natural level for either of the action alternatives.

## Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans

The Forest Plan (Land and Resource Management Plan (LRMP)), as amended by the 2005 Region 6 ROD, amendment RF #5, provides direction for the control of noxious weeds and other competing vegetation where such activities are not precluded by management area direction. The goals focus on maintaining or enhancing ecosystem function to provide for long-term integrity and productivity of biological communities, treatment of priority infestations, and monitoring the effects of all activities to reduce the impacts of invasive plants. The site-specific treatment requirements are further amended by the Wallowa-Whitman National Forest Invasive Plant Treatment Program EIS (USDA, 2010). The Sheep Project is consistent with these goals through adherence to the EIS and the Forest Plan.

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